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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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George L. Eldridge

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OLIFF & BERRIDGE, PLC

P.O. BOX 320850

ALEXANDRIA, VA 22320-4850

EXAMINER

ROBINSON, MYLES D

ART UNIT

PAPER NUMBER

2625

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/674,837	Applicant(s) ELDRIDGE ET AL.	
	Examiner Myles D. Robinson	Art Unit 2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3 - 8, 11 - 13 and 15 - 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3 - 8, 11 - 13 and 15 - 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendment was received on 1/14/2008, and has been entered and made of record. Currently, **claims 1, 3 – 8, 11 – 13 and 15 – 20** are pending.

Response to Arguments

2. Applicant's arguments (*see Remarks 1/14/2008 [page 6, sections I and II] and Interview Summary 1/3/2008*) with respect to the objections to the drawings and the rejections of **claims 1, 3 – 8, 11 – 13 and 15 – 20** under 35 U.S.C. §112 have been fully considered and are persuasive. The objections rejections of these claims have been withdrawn.

3. Applicant's arguments (*see Remarks 1/14/2008 [pages 7 – 8, section III] and Interview Summary 1/3/2008*) with respect to the rejections of **claims 1, 3 – 8, 11 – 13 and 15 – 20** under 35 U.S.C. §102(b) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of **Curry** (U.S. Patent Application Publication No. 2002/0097430).

Specification

4. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

As the Applicant has already alluded (see *Remarks 1/14/08 [page 6, section I]*), there are many different types of data compression while these claims and specification aim to describe a more specific genre of data compression. The current title does not accurately reflect the same unique specifics of this type of data compression in comparison to the many other diverse types of data compression of the prior art.

Claim Objections

5. ***Claim 3*** is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 3 depends upon the cancelled claim 2 and, therefore, is not dependent upon the subject matter of any previous claim of record.

6. ***Claim 17*** is objected to because of the following informalities: grammatical errors. It is suggested that "the contone rendering module produces use run length compression" be revised to read "the contone rendering module ~~produces-use~~ uses run length compression."

Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States

8. **Claims 1, 3, 4, 6, 8, 12, 13, 15, 16 and 18** are rejected under 35 U.S.C. 102(b) as being anticipated by **Zeck** (U.S. Patent No. 6,020,979).

Referring to **claim 13**, Zeck discloses a printer comprising:

a contone rendering module for generating a first set of image pixels having corresponding printing hints (*see Figs. 3 – 4 wherein PDL-image source 10 generates a PDL file of image signals defined in either RGB space for color images or intensity space for black and white images [i.e. first set of image pixels] in a continuous tone format and can distinguish between text/line art and contone pictures [i.e. printing hints of first set of image pixels] [column 4, lines 8 – 15]*) for processing saturated pixels thereby producing different printing hint values (*see Figs. 4A wherein tone reproduction correction (TRC) 102 maps each contone pixel of 256 levels, as commonly used, to a slightly smaller set of contone values in a range of 2^N -M levels [column 4, line 66 – column 5, line 9] and see Fig. 9, blocks 204 – 206 [column 6, lines 10 – 13]*), and

an image output terminal (*see Fig. 3, printer 14*) for receiving the different printing hint values to produce a second set of image pixels (*column 4, lines 15 – 18*),

wherein the contone rendering module produces different printing hint values (*see Fig. 9, blocks 202, 206 [column 6, lines 6 – 15]*), wherein fully saturated pixels (*see Fig. 1 wherein saturated contone pixels are represented as a CONRES image [column*

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2, lines 7 – 11 and column 4, line 66 – column 5, line 9]) that are sequentially adjacent to pixels with printing hints indicating they are edge pixels (see Fig. 2 wherein edge pixels are represented as a BINRES image [column 2, lines 13 – 18 and column 4, lines 56 – 65]) will have their printing hints changed to indicate they are edge pixels and will propagate the adjustment to further sequentially adjacent fully saturated pixel (see Abstract, column 1, lines 62 – 65, column 2, lines 19 – 21 and column 3, lines 49 – 60 wherein the image source converts both edge pixels and saturated contone pixels from either one of mixed BINRES and CONRES images to one composite image of a single BINRES resolution), and

the different printing hint values requiring less memory space than the first printing hints (column 1, lines 62 – 65, column 2, lines 19 – 21, column 3, lines 8 – 9, 11 – 13 and 49 – 60 wherein high picture quality is maintained with both text/line art as well as continuous tone images while reducing the amount of memory space overhead required).

Referring to **claim 15**, Zeck discloses the printer further wherein the contone rendering module produces different printing hint values for image pixels that are zero wherein zero pixels (see Fig. 2 wherein the white-filled pixels are analogous to zero BINRES pixels of the background) that are sequentially adjacent to pixels with printing hints indicating they are edge pixels will have their printing hints changed to indicate that they are edge pixels and will propagate the adjustment to further sequentially adjacent fully saturated pixel (see Abstract, column 1, lines 62 – 65, column 2, lines 19 – 21 and column 3, lines 49 – 60 wherein the image source converts both edge pixels

and background zero pixels from either one of mixed BINRES and CONRES images to one composite image of a single BINRES resolution).

Referring to **claim 16**, Zeck discloses the printer further wherein the contone rendering module losslessly compresses the different printing hint values (*column 6, lines 51 – 57*).

Referring to **claim 18**, Zeck discloses the printer further wherein the contone rendering module adjusts printing hint values for a saturated pixel from a text pixel to edge pixel (*see Abstract, column 1, lines 62 – 65, column 2, lines 19 – 21 and column 3, lines 49 – 60 wherein the image source converts both edge pixels and saturated contone pixels from either one of mixed BINRES and CONRES images to one composite image of a single BINRES resolution*) when there is no significant change in the end printed result (*column 5, lines 10 – 22 wherein the example has $N=8$ such that there are 256 levels, however many useful halftone dots have less than 256 because the human eye mostly has difficulty in distinguishing 256 different levels*).

Referring to **claims 1, 3, 4 and 6**, the rationale provided in the rejections of claims 13, 15, 16 and 18, respectively, are incorporated herein. In addition, the apparatuses of claims 13, 15, 16 and 18 perform the methods of claims 1, 3, 4 and 6, respectively.

Referring to **claims 8 and 12**, the rationale provided in the rejections of claims 1 and 4, respectively, are incorporated herein. In addition, the methods of claims 1 and 4 include the elements and limitations of the methods of claims 8 and 12, respectively. Furthermore, as discussed above in the rejections of claims 1, 6 and 13, Zeck discloses

processing at least one of a saturated pixel from a text pixel to an edge pixel with no significant change in the output image.

Claim Rejections - 35 USC § 103

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. ***Claims 5, 7, 17, 19 and 20*** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Zeck** (U.S. Patent No. 6,020,979) in view of **Toyokawa** (U.S. Patent No. 4,673,987).

Referring to **claim 17**, Zeck discloses the printer as discussed above in the rejection of claim 13 but does not explicitly disclose the printer further wherein the contone rendering module produces use run length compression to compress the adjusted printing hint values.

Toyokawa discloses the printer wherein the contone rendering module produces use run length compression to compress the adjusted printing hint values (see *Fig. 1 wherein run length counter 46 uses run length compression [Abstract, column 3, lines 3 – 21 and column 4, lines 44 – 49] and see Fig. 1 wherein block encoder 32 in conjunction with uniform tone detector 36 output a dither code word [i.e. a printing hint value] identifying the logic states of all the pixels of subject 22 such that each dither code word designates a predetermined array of black pixels and white pixels [column 2, line 43 – column 3, line 2]*).

Zeck and Toyokawa are combinable because they are from the same field of endeavor, being printing hints rendering digital images. At the time of the invention, it would have been obvious to one of ordinary skill in the art to include run length compression of printing hints along with rendering digital images. The suggestion/motivation for doing so would have been to reduce the amount of bandwidth required for transmission and repetition in the printing hints transmitted thus using transmission time more efficiently, as suggested by Toyokawa (*column 1, lines 33 – 42, column 1, line 62 – column 2, line 4 and column 6, lines 42 – 47*).

Referring to **claim 19**, Zeck discloses the printer as discussed above in the rejection of claim 13 but does not explicitly disclose the printer further wherein the contone rendering module reduces entropy in the printing hints by greater than forty percent.

Toyokawa discloses the printer wherein the contone rendering module reduces entropy in the printing hints by greater than forty percent (*see column 6, lines 37 – 41 wherein:*

$$1 - \frac{1}{\text{Data Compression Rate}} = \text{Data Rate Savings (percentage)}$$

Therefore, the run length compression rates being 2.88 and 2.76 yield data rate savings of 65.2% and 63.7%, respectively, over the 40% of the prior art).

Zeck and Toyokawa are combinable because they are from the same field of endeavor, being printing hints rendering digital images. At the time of the invention, it would have been obvious to one of ordinary skill in the art to include run length compression of printing hints along with rendering digital images which significantly

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reduces entropy. The suggestion/motivation for doing so would have been to reduce the amount of bandwidth required for transmission and repetition in the printing hints transmitted thus using transmission time more efficiently, as suggested by Toyokawa (*column 1, lines 33 – 42, column 1, line 62 – column 2, line 4 and column 6, lines 42 – 47*).

Referring to **claim 20**, Zeck discloses the printer as discussed above in the rejection of claim 13 but does not explicitly disclose the printer further wherein the contone rendering module uses more than one compression algorithm.

Toyokawa discloses the printer further wherein the contone rendering module uses more than one compression algorithm (*see column 4, line 32 – column 5, line 16 and Tables 1 – 2 wherein computer 44 in conjunction with run length counter 46 and memory 48 can utilize a 1-D compression algorithm as well as a 2-D compression algorithm*).

Zeck and Toyokawa are combinable because they are from the same field of endeavor, being printing hints rendering digital images. At the time of the invention, it would have been obvious to one of ordinary skill in the art to include more than one run length compression method of printing hints along with rendering digital images. The suggestion/motivation for doing so would have been to reduce the amount of bandwidth required for transmission and coded data volume transmitted thus using transmission time more efficiently, as suggested by Toyokawa (*column 1, lines 33 – 42, column 1, line 62 – column 2, line 4, column 4, lines 40 – 43 and column 6, lines 42 – 47*).

Referring to **claims 5 and 7**, the rationale provided in the rejections of claims 17 and 19, respectively, are incorporated herein. In addition, the apparatuses of claims 17 and 19 perform the methods of claims 5 and 7, respectively.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Crean et al. (U.S. Patent No. 6,144,461) disclose a method for generating rendering tags to facilitate the printing of antialiased images and includes the same assignee and at least one of the same inventors as the instant application (*see Abstract and Figs. 3 – 4*).

Curry (U.S. Patent Application Publication No. 2002/0097430) discloses a system for directed acuity segmentation resolution compression and decompression (*see Abstract and Figs. 6 – 8*).

Tai et al. (U.S. Patent No. 7,218,420) disclose gray level halftone processing (*see Abstract and Fig. 1*).

Loce et al. (U.S. Patent No. 7,295,346 and Japanese Patent No. 2005-018764) disclose methods for antialiasing images that contain one or more image objects such as colored text, line art, and graphical objects, such that the edge pixels of an antialiased image object will exhibit relatively uniform values, and the appearance of the image of the image object is improved wherein upon detecting a region containing a region containing a background image level that adjoins an image object having pixels

values in a range other than a range of limit values, the antialiasing filter sets the pixel values of the edge or border pixels of the image object to substantially the same value (see *Abstract and Figs. 6 – 9*).

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Myles D. Robinson whose telephone number is (571) 272-5944. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler L. Haskins can be reached on (571) 272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Myles D. Robinson/
Examiner, Art Unit 2625
5/7/08

/Twyler L. Haskins/
Supervisory Patent Examiner, Art Unit 2625